User Manual
AuviTran Audio ToolBox
AxC-Dante

User manual version	Date	Owners	Firmware version
V2.0	May 2026	SBT / OPT	From 1.025 / 11.048
V1.1	2013	YAE	From 0x0103 / 2.00

PRECAUTIONS

- Do not apply excessive pressure on connectors or any other part of the board. Do not touch the metallic sharp parts (pins) of the product.
- This product is electrostatic sensitive; this must be checked before it is touched or used.
- The disconnect devices of the Audio ToolBox unit are the appliance inlet of the auxiliary power supply and the appliance inlet on the rear side of the unit. These must be easily reachable.
- To prevent electric shock, unplug the unit before handling. The achievement of other operations not mentioned in this document is prohibited. Repairs can be performed only by a technician trained and qualified.
- Each connection must be Safety Extra Low Voltage kind (SELV), and must stay inside buildings.

LIMITATION OF LIABILITY

In no case and in no way, the provider of this Product (AuviTran, the distributor or reseller, or any other party acting as provider) shall be liable and sued to court for damage, either direct or indirect, caused by and to the user of the board and which would result from an improper installation or misuse of the Product. “Misuse” and “improper installation” mean installation and use not corresponding to the instructions of this manual.

Please note that graphics given in this manual (drawings and schemes) are only examples and shall not be taken for a real vision of the equipment configuration.

AuviTran is constantly working on the improvement of the products. For that purpose, the product's functionalities are bound to change and be upgraded without notice. Please read carefully the User’s manual as the new functionalities will be described therein.

TRADEMARKS

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1. OVERVIEW

Audinate's Dante technology provides high performance digital media networking that meets the quality and performance requirements of the professional audio market.

Dante is built on Internet Protocols, not on Ethernet level.

Using standard IP over Ethernet, Dante is able to run on inexpensive off-the-shelf computer networking hardware, and with use of standard QoS, can share installed networks with other data and computing traffic.

Dante provides sample-accurate synchronization and can deliver the very low latency required by professional audio. Dante's network- centric, audio independent approach to synchronization allows synchronized playback across different audio channels, devices and networks, even over multiple switch hops.

AxC-DANTE card provides to the AuviTran Audio ToolBox platform a cost effective gateway to DANTE connected devices.

Combined with other AuviTran Audio ToolBox cards, the AxC-DANTE card opens exciting possibilities to the professional audio systems:

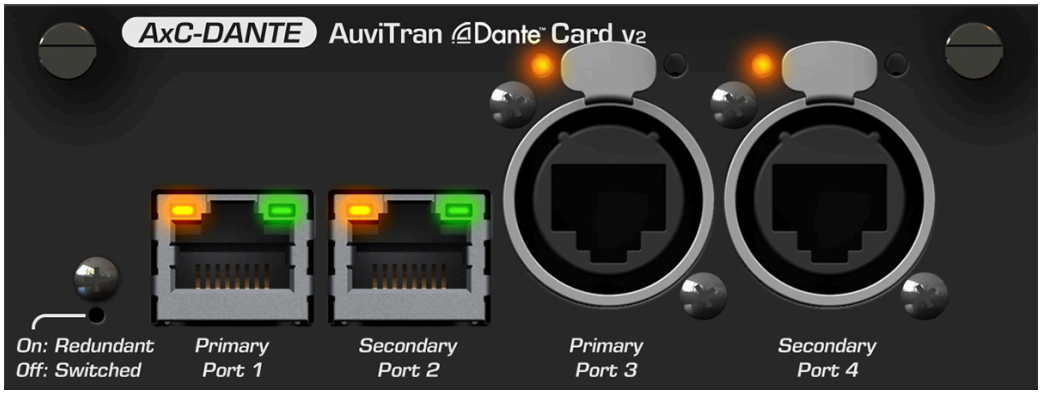
- DANTE based stage boxes, in combination with the high performance AxC-AX4M high class mic/line preamps cards and AxC-AX4O analog out card
- DANTE bridges in combination with other network AxC card such as DANTE-MADI bridge, DANTE-EtherSound bridges, with unique connectivity possibilities (dynamic patching solution, remote control, ASIO recording/playback…)

2. TECHNICAL SPECIFICICATIONS

AxC–Dante: Dante card for the AuviTran Audio ToolBox platform	
Size	200 mm x 100 mm x 40 mm – 7.9”x3.9”x1.6” Format AuviTran Audio ToolBox platform cards
Power supply	+12V / +3.3V - Through AuviTran Audio ToolBox backplane
Storage: Temp/Humidity	- 5°C to 70°C / 0% to 95% (non-condensing)
Operating: Temp/Humidity	0 °C to 50°C / 5% to 90% (non-condensing)
Connectors	• 2 x Neutrik EtherCon RJ45-XLR female connectors • 2 x RJ45 connectors
AES67 Operation modes	• Switch – Integrated Gigabit switch • Redundant with Primary and Secondary ports, replicated on ports 3 and 4
Audio Outputs	Up to 64 channels
Audio Inputs	Up to 64 channels
Sample format	24 bit
Sample rate	From 44.1 to 96 kHz
Synchronization	Automatic from Dante network

Control and monitoring Environment	
AVS-Monitor	AVS-Monitor enables to remotely set, control and monitor a Dante or EtherSound network and provides enhanced control pages to manage the specific parameters of cards inserted in the different slots
Web base control (from AVS-Monitor)	For audio patch of any Dante device, and additional features: multicast/unicast; redundant mode or switch mode...
Merging AES67 Virtual Sound Card	The optional Dante Virtual Soundcard software allows the PC/Mac to connect to a Dante audio network. Note: a license purchase is required (see Audinate web site)

3. FRONT PANEL / WIRING



AxC-DANTE front panel

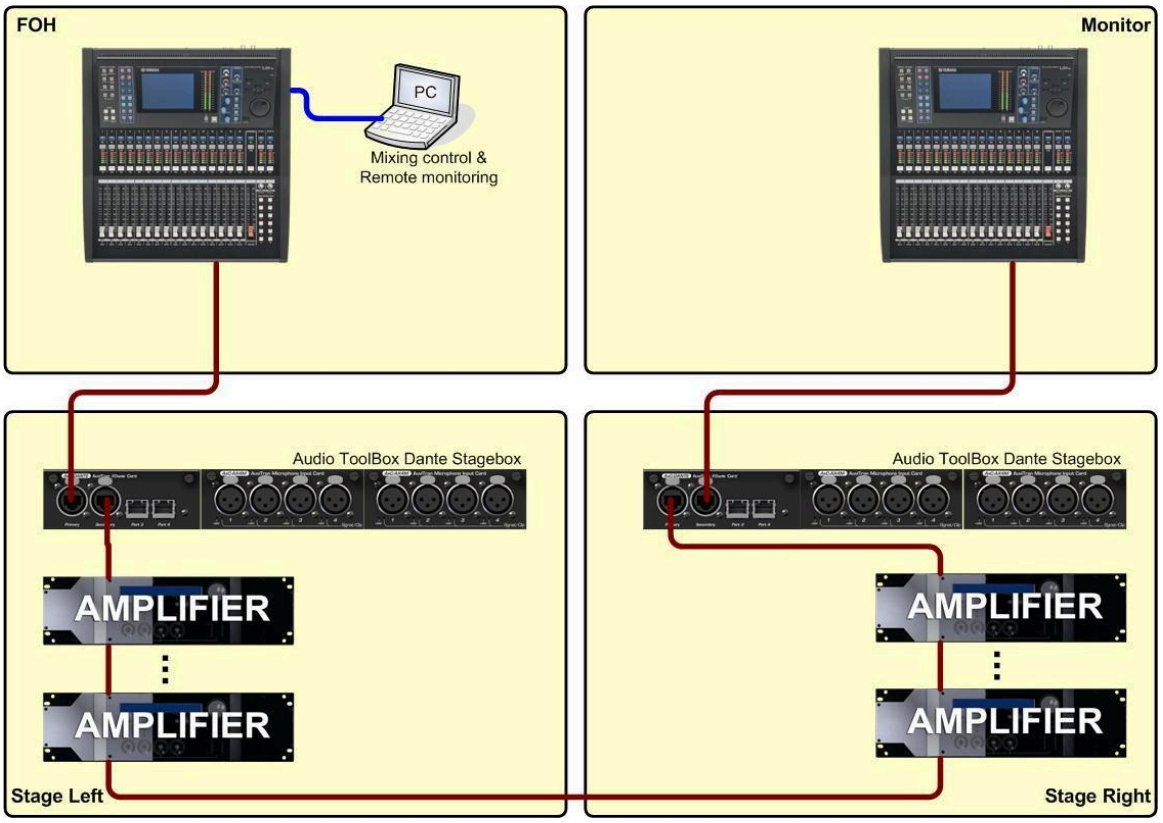
AxC-DANTE card provides 4 Giga-Ethernet ports that allow various architecture possibilities. Two modes are available, with their own wiring restrictions. Please read carefully the following lines to avoid any mistakes and network errors when building a Dante network.

3.1. Switch Mode

> **NOTE**
>
> When powered up for the first time, the AxC-DANTE card starts in Switch mode.

In Switch mode, all 4 ports are switched together and behave the same way. No “Primary” or “Secondary” capability is provided. The AxC-DANTE card can be viewed as a regular 4-port Gigabit Ethernet switch. Daisy-chained and/or star architectures can be easily built using this mode. In some small architectures, the need for an external Gigabit Ethernet switch can be reduced or even suppressed.

3.1.1. Daisy-Chain architecture

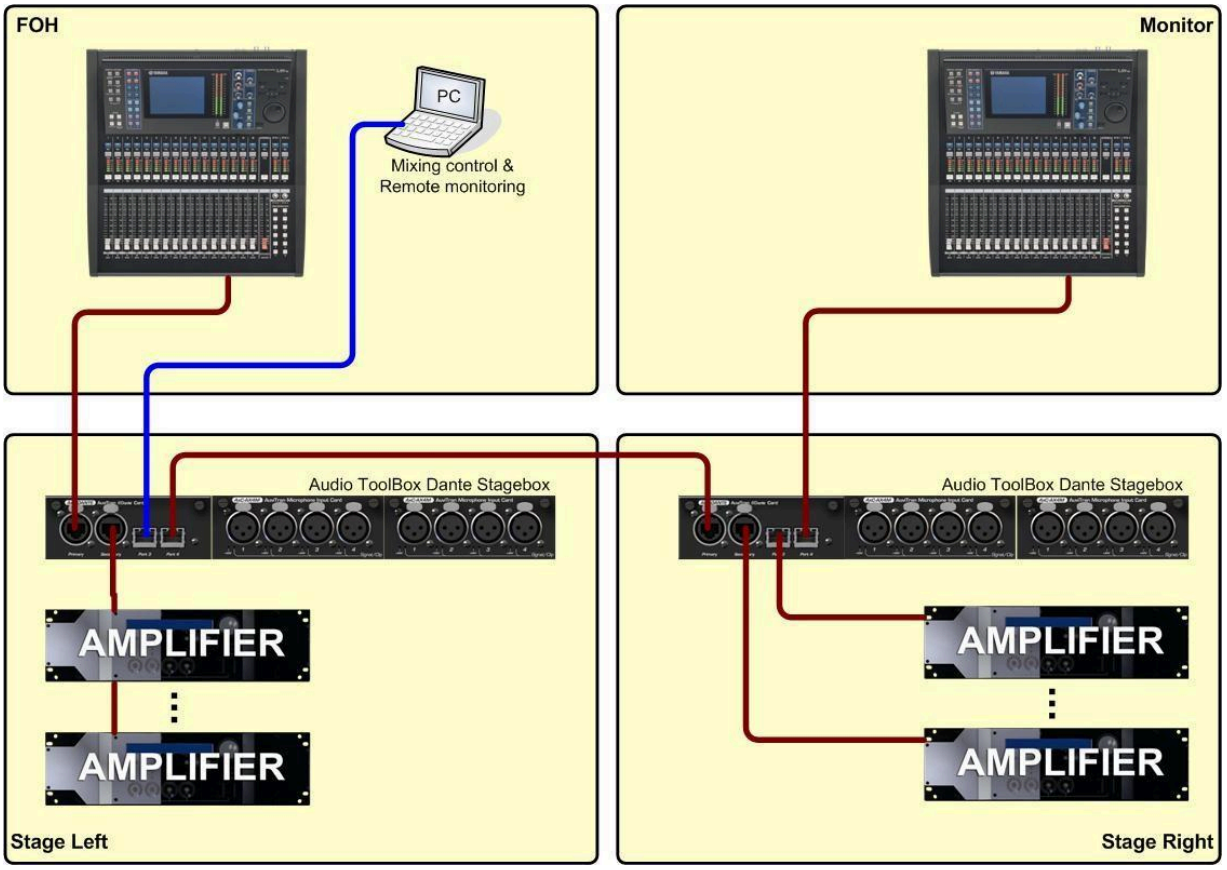


This wiring is the simplest, for the lowest cost. All devices are daisy-chained using a single Ethernet cable. Please note that in this case, failure can have serious drawbacks. If a single cable is broken, or if a device fails, the whole network behind this failure will be unavailable.

Please also be aware that each new devices chained will add latency to the network (a switch “hop”). In this example, if many amplifiers are daisy-chained, latency can raise-up dramatically.

3.1.2. Star architecture with no switch

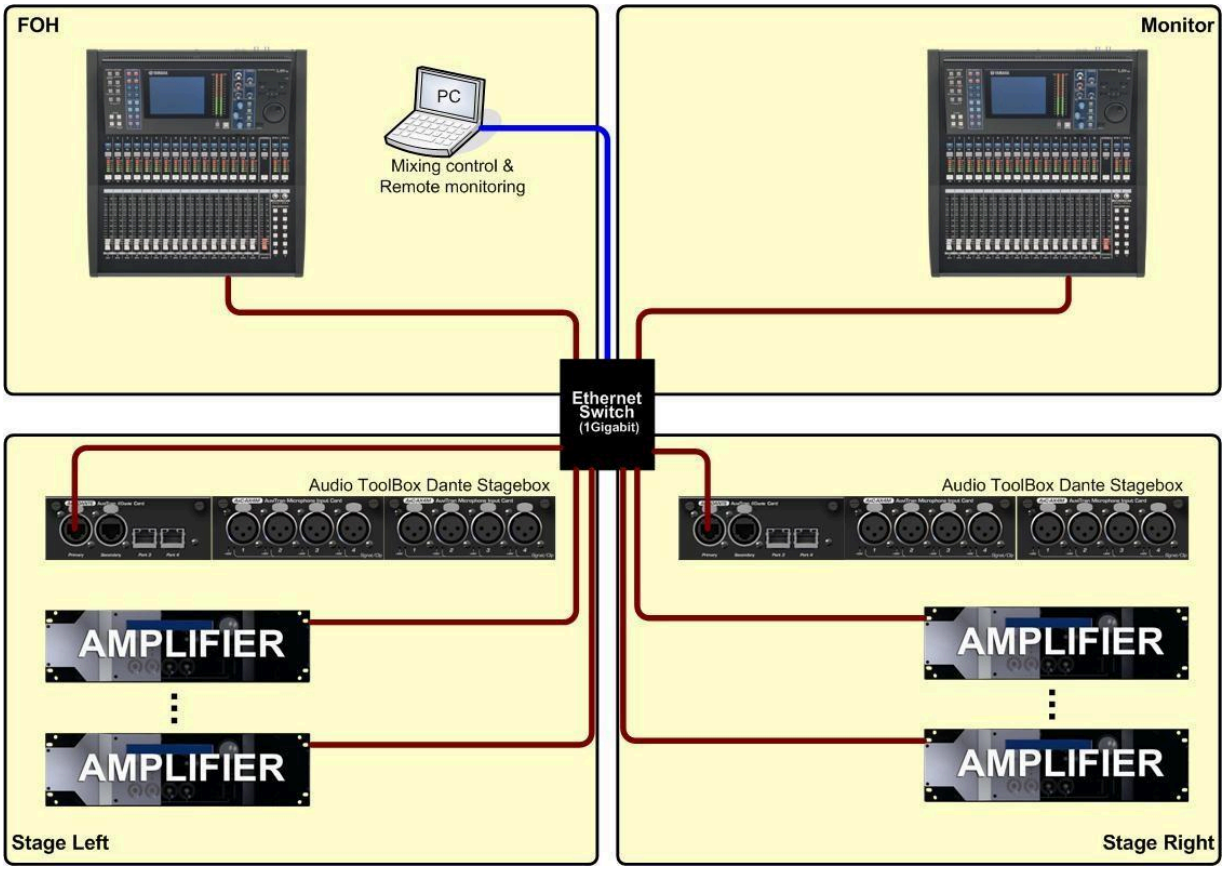
Thanks to the 4 ports of AxC-DANTE card, previous example can be improved using a star architecture without the need of an external switch. Please have a look to the following:



AxC-DANTE card is acting as a regular switch. Multiple amplifiers can be dispatched on AxC-DANTE remaining ports, reducing switch hops, and thus, overall latency. Security is also slightly improved, as an amplifier failure in a branch will not impact others branches.

3.1.3. Star architecture with external switch

The previous example is a great solution for small networks, and mainly signal broadcasting on amplifiers. Security is not at its best, as if an AxC-DANTE card is in failure, the whole network will fall down.
The usual way to wire a switched Dante network with maximum security is to add an external Gigabit Ethernet switch.

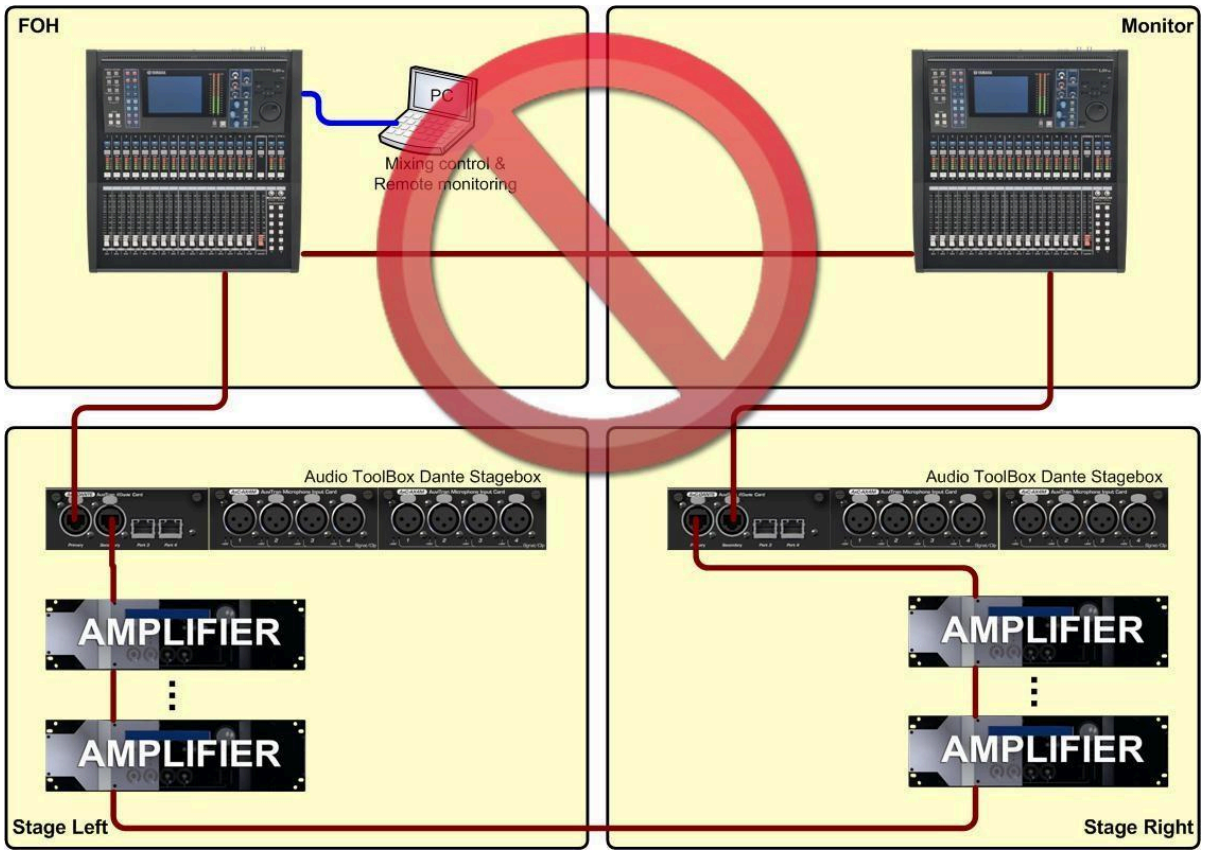


In this case, failure of a device will have no impact on others devices.

Please note that in this example, the control computer can be plugged anywhere in the network, on any device (not necessarily on the switch itself).

3.1.4. Switch mode and loop architecture

Regular Ethernet switch functionality is provided by the devices. Therefore, a loop should NEVER be created with the devices, as the immediate fall down of the entire network will be observed.



3.2. Redundant Mode

Dante devices can also work in a redundant mode. When this mode is enabled, two separated Dante networks are created. These networks are usually called “Primary” and “Secondary” networks. Maximum security in a Dante network can be reached using this mode.

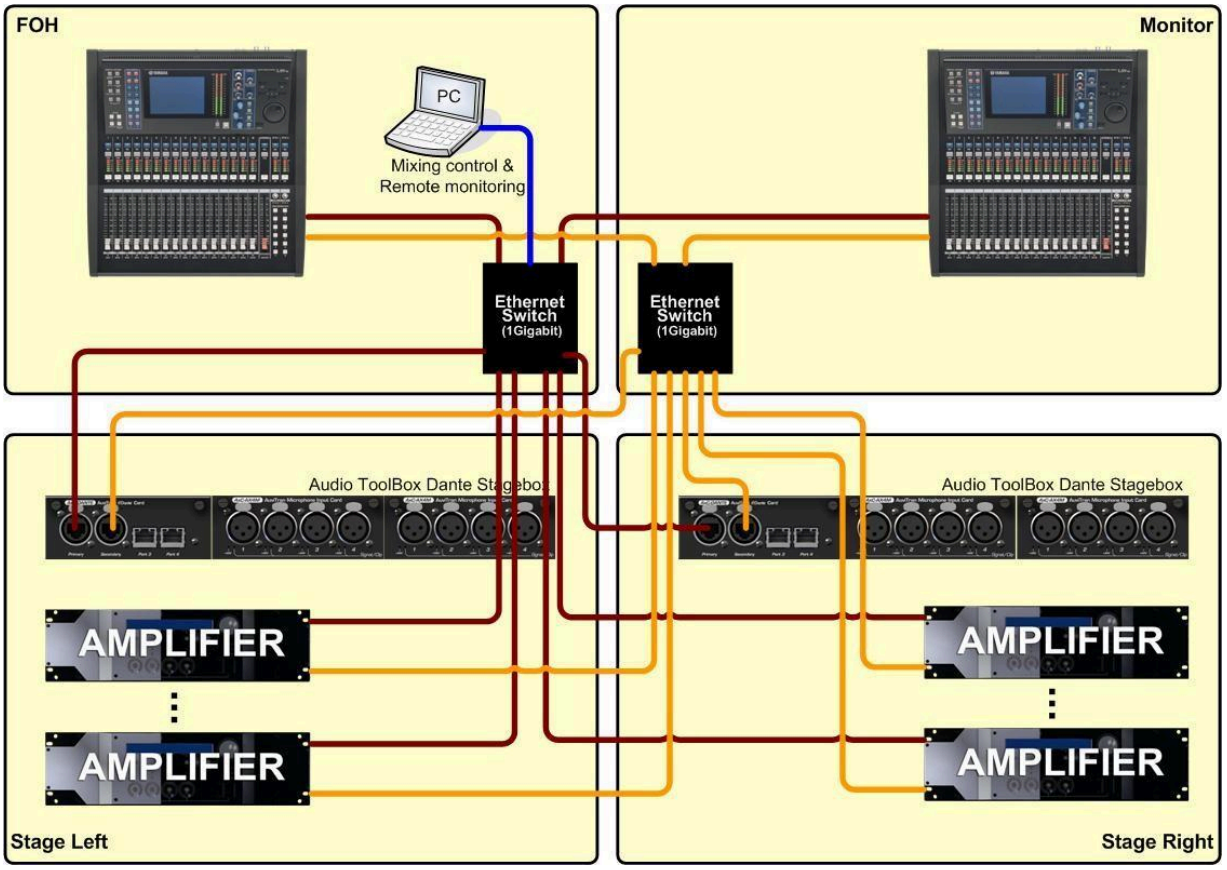
> **IMPORTANT**
> When in redundant mode, Primary and Secondary networks should NEVER be connected together. If so, the whole network will fail! Please always ensure that the devices are in the right mode and properly wired before adding them to the network.

ⓘ When in redundant mode, AxC-DANTE connectors act as follow:

- Primary: Primary network
- Secondary: Secondary network
- Port3: Primary network (switched with Primary port)
- Port4: Secondary network (switched with Secondary port)

ⓘ In following examples, Primary network is represented in Dark-Red, and Secondary network in Orange.

3.2.1. Redundant mode with external switch

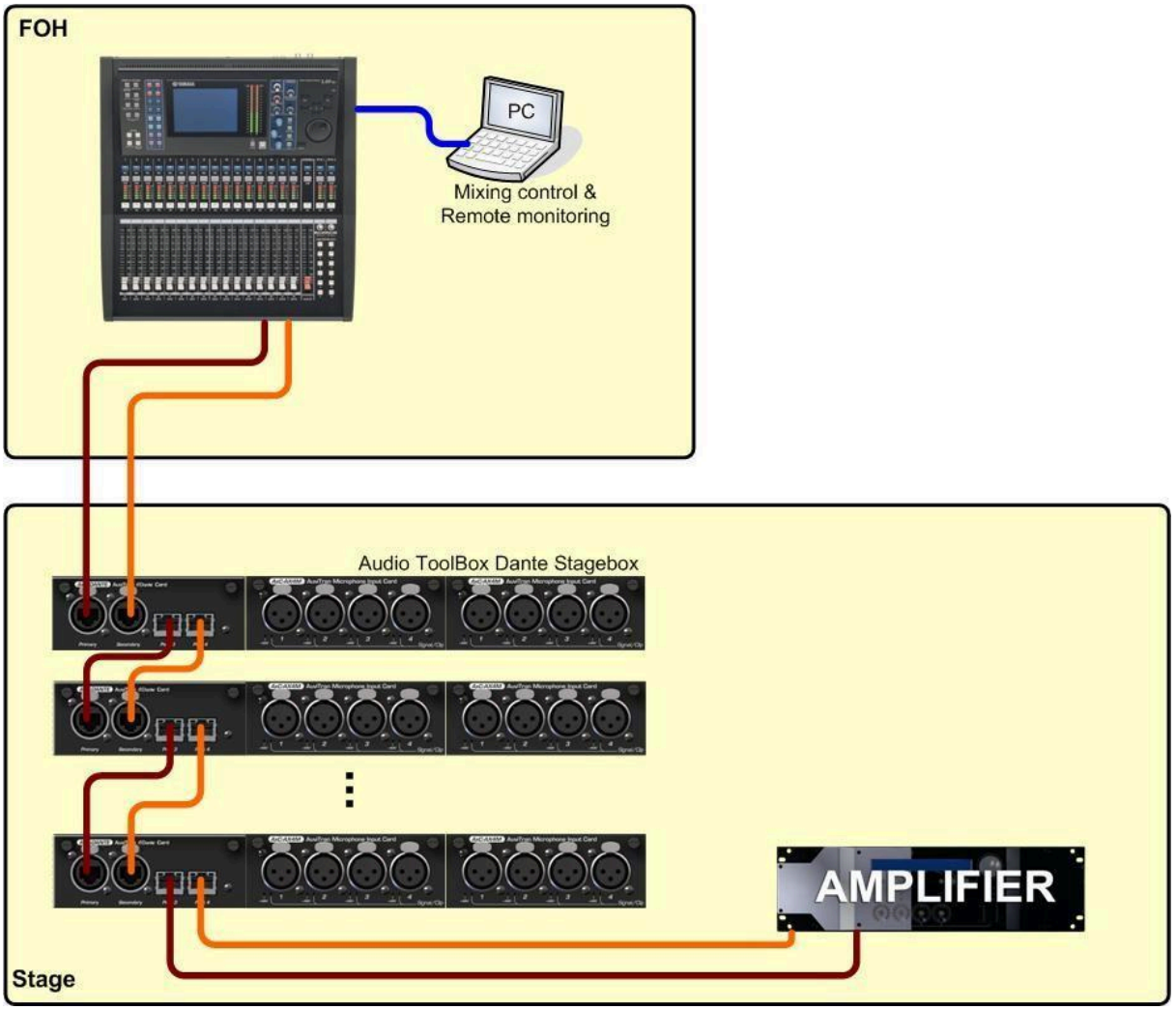


This is the typical way to wire a Redundant Dante network. All devices should be configured as Redundant BEFORE wiring!

Two external switches are needed in this case. One for Primary network, the other one for Secondary network. As mentioned before, these two switches should NEVER be connected together.

3.2.2. Redundant mode without external switch

Small redundant networks can be easily built without the need for an external switch, thanks to the 4 Ethernet ports of the AxC-DANTE. Costs may be saved when only cable-redundancy is required.



Cable reliability of the network can be improved by this solution at no extra cost. However, because devices are daisy-chained, the same level of redundancy as that provided by a regular redundant network with external switches cannot be reached.

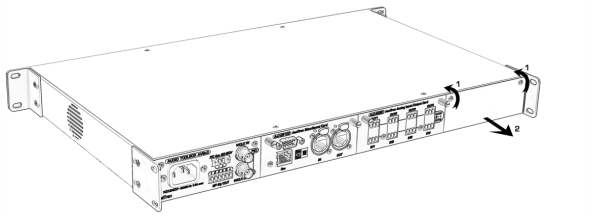
4. CARD INSERTION / EXTRACTION

WARNING

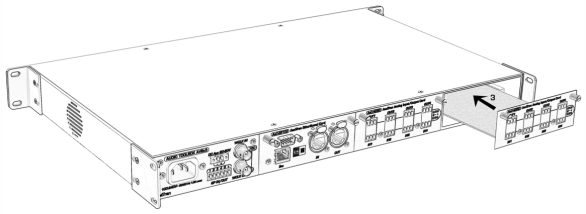
- ➔ The cards are electrostatic sensitive; this must be checked before they are touched or handled.
- ➔ The Toolbox must be powered off before inserting any AxC card. (unplug the power cable).

4.1. AxC-Card Insertion

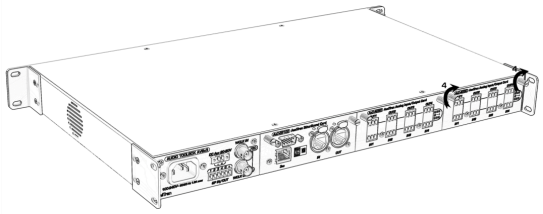
The following procedure applies to all the Audio Toolbox models.



1. Unscrew and remove the plate blocking the AxC card slot location.



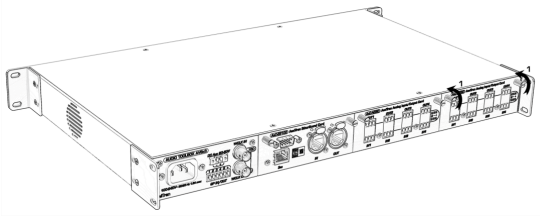
2. Insert the AxC card by carefully sliding it into the two side rails of the slot.



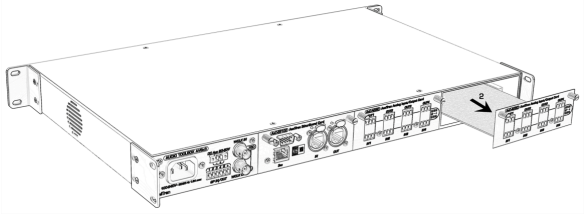
3. Tighten the two screws of the AcX card.

4.2. AxC-Card Extraction

The following procedure applies to all the Audio Toolbox models.



1. Unscrew the AxC card that has to be removed.
The two screws remain attached to the AxC card.



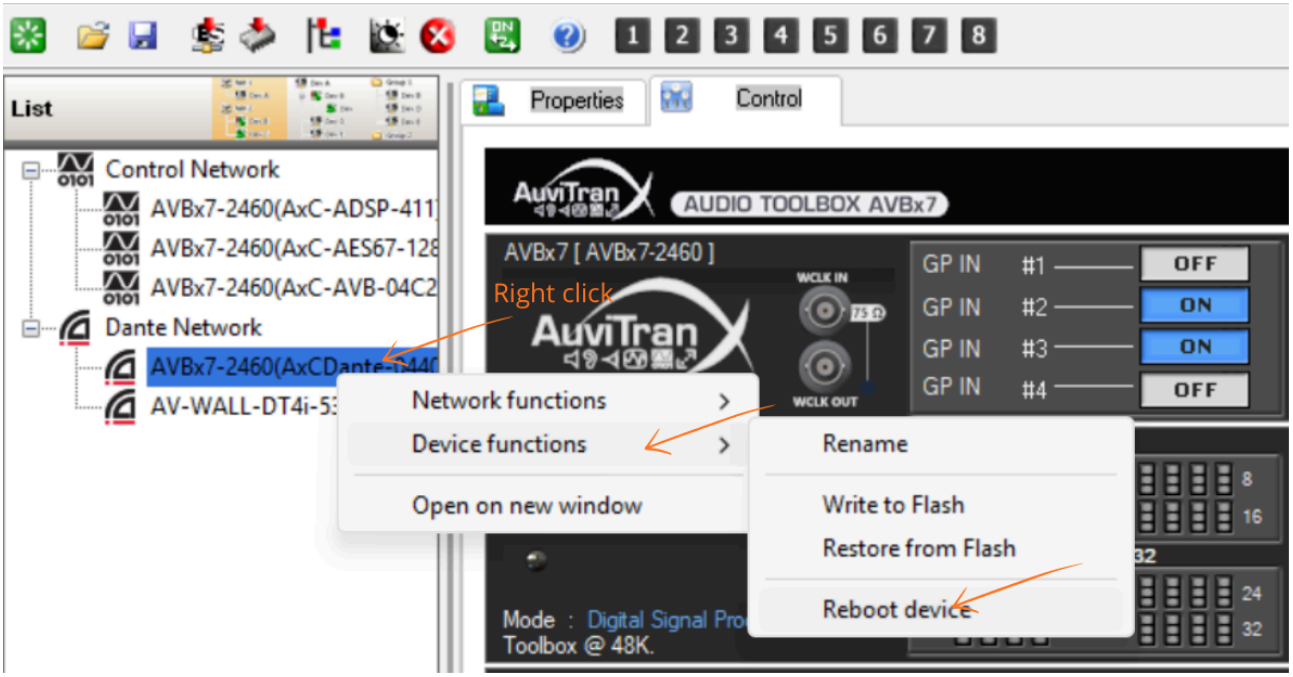
2. Pull the AxC card to withdraw it from the chassis.

5. SOFTWARE REMOTE CONTROL

5.1. Useful things

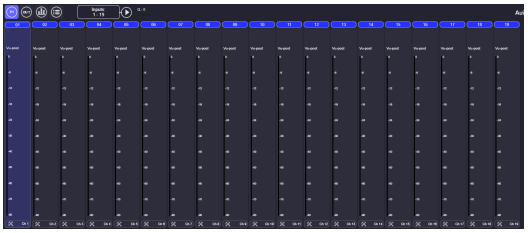
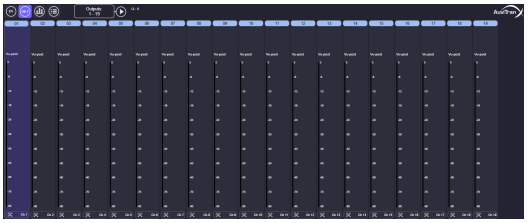
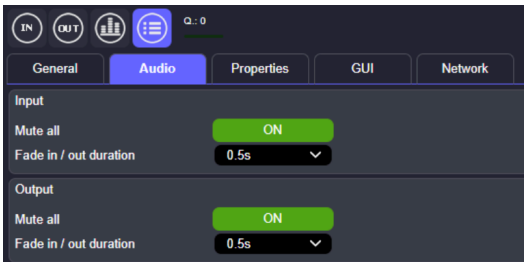
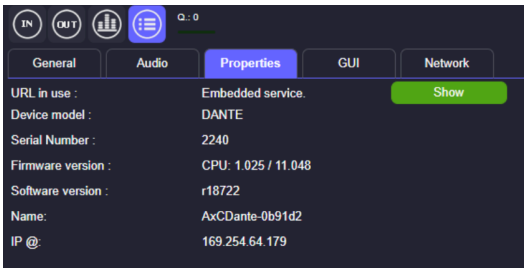
5.1.1. Rebooting a device

To reboot a device, the following steps must be performed: the device is right-clicked in the 'List', 'Device Function' is selected, and 'Reboot device' is clicked. (Only the card will be rebooted) :



5.1.2. Parameters

To gain access to the AxC-Dante parameters, the share button located on the right side of the card in AVS-Monitor is to be clicked :

Screenshot	Explanation
	Monitoring input channels of the card.
	Monitoring output channels of the card.
	Monitoring all input and output channels of the card
	General settings to: • Revert to factory the settings • Save or restore the settings of the card
	Audio settings to: • Mute all inputs of the card • Mute all output of the card
	Properties of the card: • Serial Number • Firmware version • Software version • IP of the card
	GUI settings where it is possible to choose: • Themes of the UI • Slice name position • Slice range • Layers select • QOS

	• Double click to init faders • Vu meters width
	Network settings to activate the Redundancy mode of the card

5.2. Switch / Redundant Mode

When the card is powered up for the first time, it will be started in switched mode.

WARNING

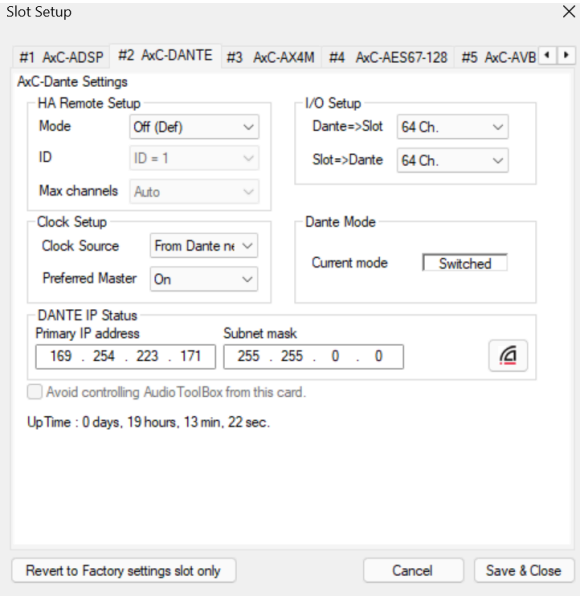
➔ Network architecture is seriously impacted by switching between modes. If the mode is adjusted without checking the RJ45 cable plugging, a dead loop may be created.

➔ All cables are always to be unplugged (except the one allowing card access) before the network mode is altered.

5.2.1. Mode selection using AVS-Monitor software

On the Toolbox device control page, the following information is shown for the slot where the AxC-DANTE card is connected:

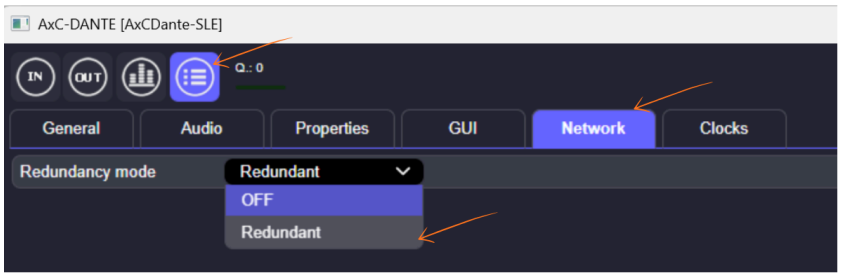
The AxC-DANTE setup page is opened by simply clicking the front panel picture on the left. The layout of the setup page is shown below:



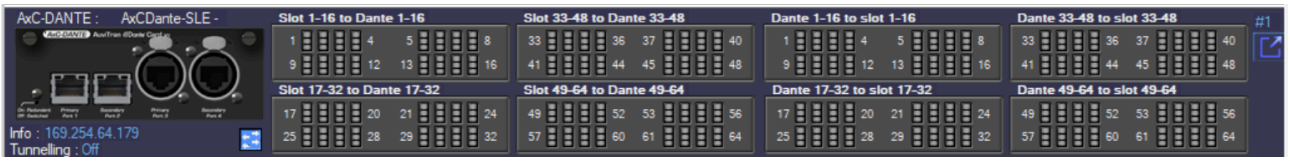
Network Setup allows the user to choose if the card will work in switched or redundant mode. The current working mode is displayed, and cannot be modified.

In order for the working mode to be changed, the following actions must be taken:

- the parameters are accessed,
- 'Networks' is clicked within the fourth button on top,
- The 'Redundancy mode' is selected between 'OFF (switched)' and 'Redundant' before 'Apply' is clicked.
- As a result of this being completed in AVS-Monitor, a card reboot is automatically triggered.



The background behind the map turns blue after the reboot of the card :



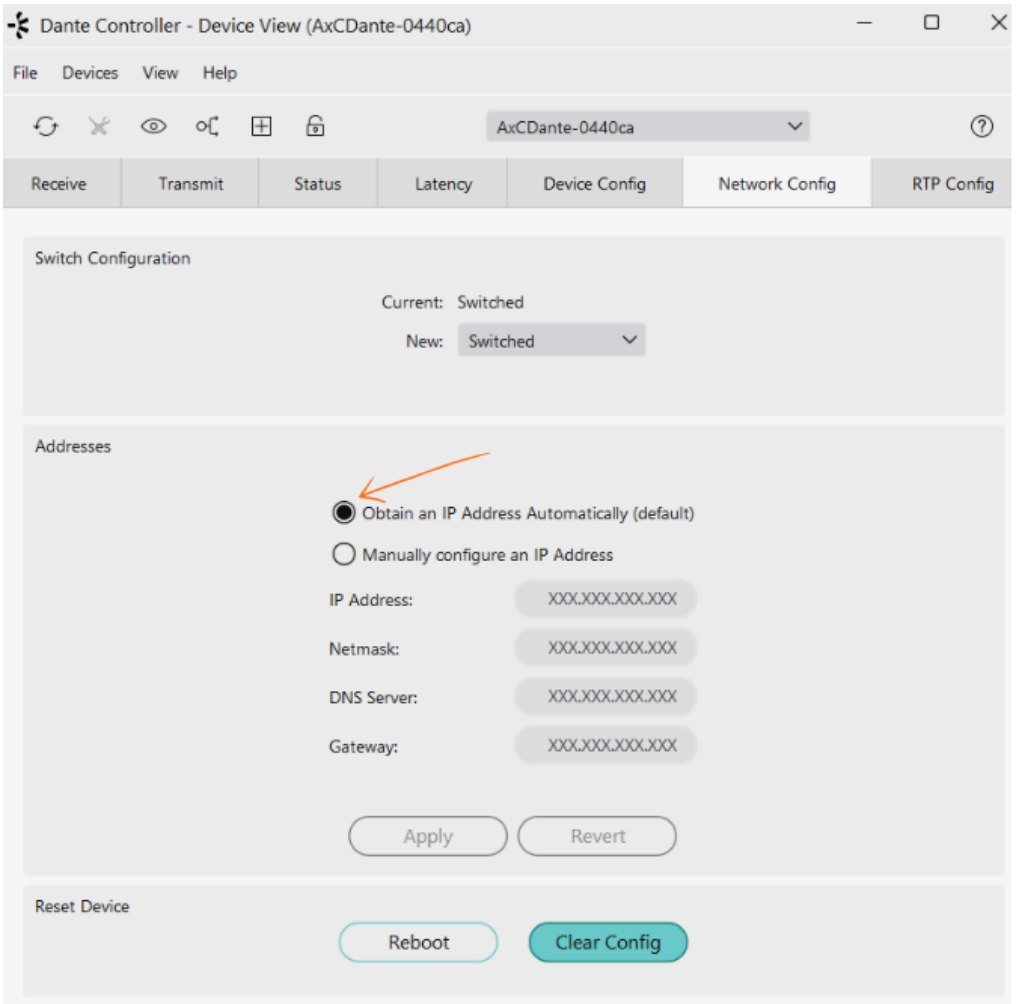
5.3. Fixed / Dynamic IP configuration

5.3.1. Dynamic IP

An IP address is automatically assigned to a Dante device by the network. For this process, a DHCP server MUST be active within the network, through which IP addresses are automatically distributed to all devices.

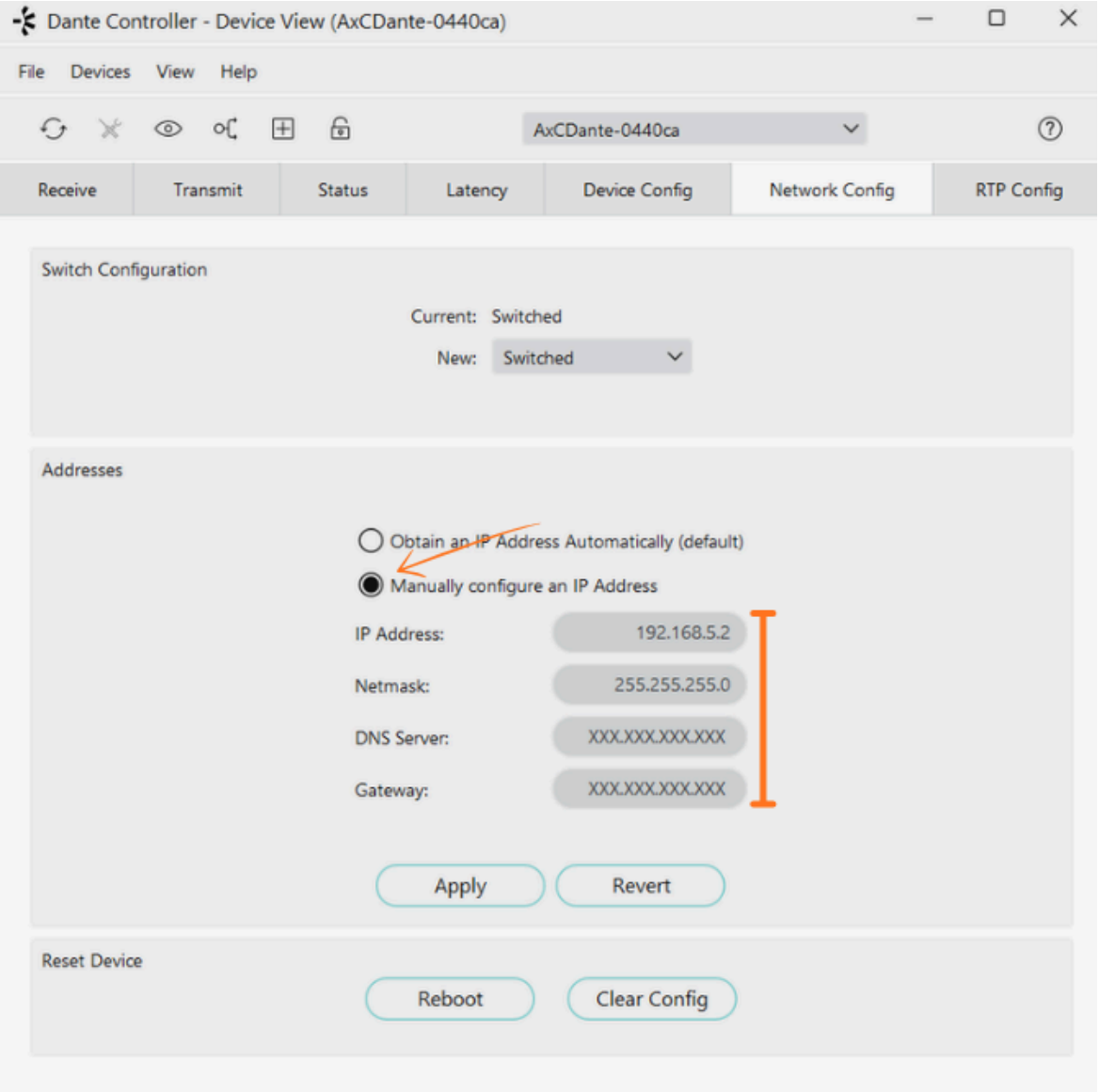
If no DHCP server is operating on the network, a default IP address is allocated to Dante devices at startup (typically "169.254.x.y", with netmask "255.255.0.0"). Care should be taken to ensure the computer's network interface card is configured to allow access to this address range.

Within the same configuration tab as before, "Obtain an IP Address Automatically (default)" is to be selected.



5.3.2. Fixed IP address

If a DHCP server is not available on the network, or if all IP addresses must be manually configured according to network requirements, the device can be set to a 'fixed' IP address mode:



Once the blanks have been completed according to system requirements, the configuration must be applied. A request will be generated to reboot the module so that the changes can take effect.

5.4. Clock Setup

There are two ways to configure audio clock inside the Audio Toolbox:

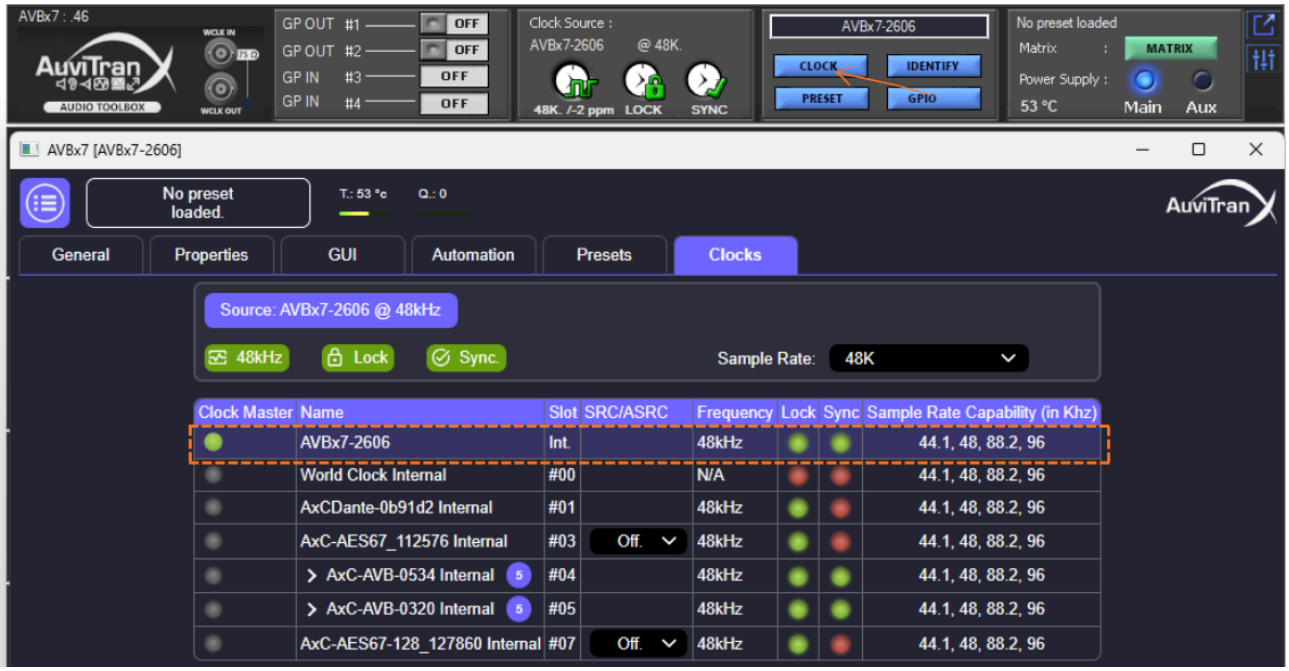
- Audio Toolbox is slave, and receive audio clock from Dante network
- Audio Toolbox is master, and will feed the clock to the Dante network

5.4.1. Dante Master – ToolBox Slave

The Dante network is established as the clock master, and the ToolBox is synchronized with the AxC-Dante card by proceeding as follows: The ToolBox clock setup page is opened in the AVS-Monitor software, where the clock source is configured to the AxC-Dante card.

5.4.2. Dante Slave – ToolBox Master

To force the Dante network to be synchronised with the Toolbox clock, please proceed as follows: In the AVS-Monitor Software, open the ToolBox clock setup page, and select the clock source to be something else than the AxC-Dante card:

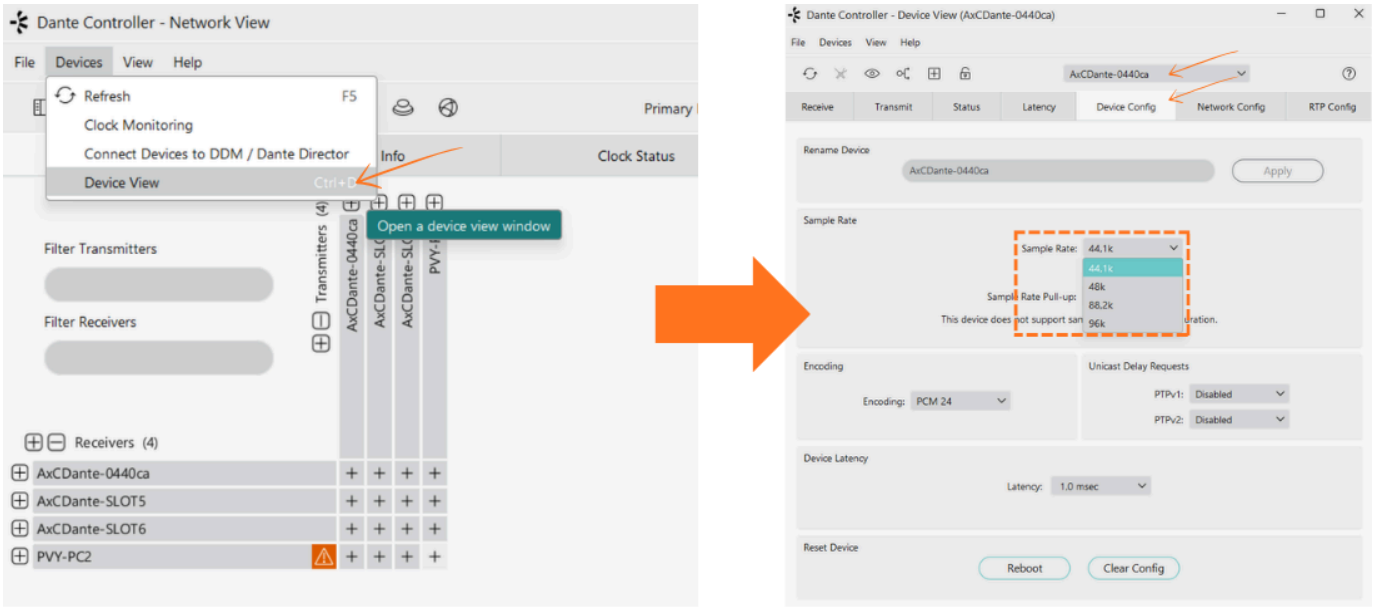


5.5. Sample Rate

AxC-DANTE can work at **44.1**, **48**, **88.2** or **96** kHz sample rate frequency. The working sample rate can be easily changed using Dante Controller software. To do so, go to “Device Device View” in Dante Controller software. A new window will open. Select the device, and go to “Device Config” Tab.

WARNING

➔ This operation can be performed only when the e-ASRC has been turned on. If the e-ASRC is turned off, the ToolBox sample rate must be modified

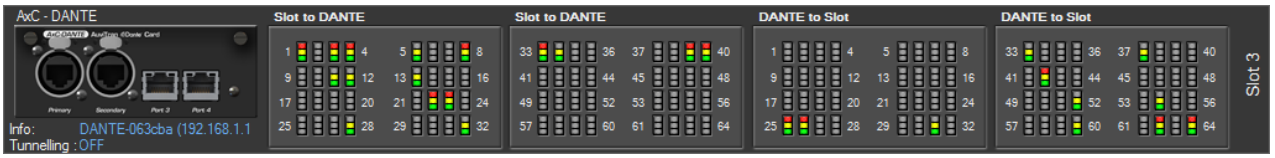


In order for the sample rate to be adapted to meet system requirements, the desired frequency is selected via the 'Sample Rate' combo box. A device reboot should be performed once this setting is modified.

Care must be taken to ensure that patching is only executed between devices sharing the same sample rate. All other devices within the Audio Toolbox rack are also to be set to the proper sampling frequency to prevent audio issues

5.6. Vu-Meters

AVS-Monitor Control page displays real-time signal/clip vu meters for all AxC-DANTE 64 inputs and 64 outputs audio channels.



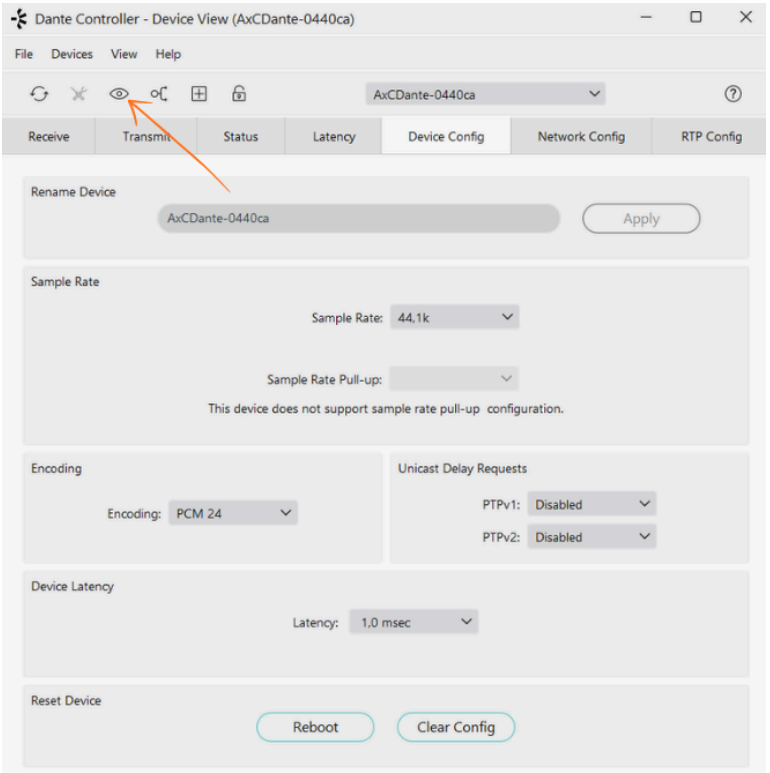
Refresh time is approximately 10 times per second. On the left, “Slot to DANTE” vu-meters are audio channels that come from Toolbox backplane, and go “to” the Dante network. On the right, “DANTE to Slot” vu-meters are audio channels that come from the Dante network, and go “in” the Toolbox backplane.

Signal/clip vu-meters have 4 states:

- OFF: signal is below -81dBFs
- GREEN : signal is between -81dBFs and -48dBFs
- GREEN + YELLOW : signal is between -48dBFs and -18dBFs
- GREEN + YELLOW + RED : signal is between -18dBFs and 0dBFs

5.7. Identify Card

Particular cards are identified over the network via the Dante Controller software. This is done by selecting the 'eye' icon located in the Device View window.



Select the card to identify, and click this icon. The card will blink all its front panel LEDs during a few seconds, making a visual identification really easy.

5.8. Renaming Dante-ID

WARNING

Each Dante device has a unique MAC address, and a unique logical ID attached to it. This logical ID is called the Dante ID. Communication and audio routing is made thanks to this Dante ID. From this point, it is highly recommended to change Dante ID when no audio is playing, to avoid any undesired noise or audio loss!

Dante ID should be unique inside a Dante network. To avoid any unwanted double ID, MAC address (that is always unique) is automatically added at the end of the Dante ID.

In order for the card's Dante ID to be modified, the current ID is to be clicked. A pop-up window will then be displayed where the new name can be typed in.

After the new name has been entered, the 'OK' button must be selected. No attention needs to be paid to the MAC address, which is automatically added following the user-defined name.

WARNING

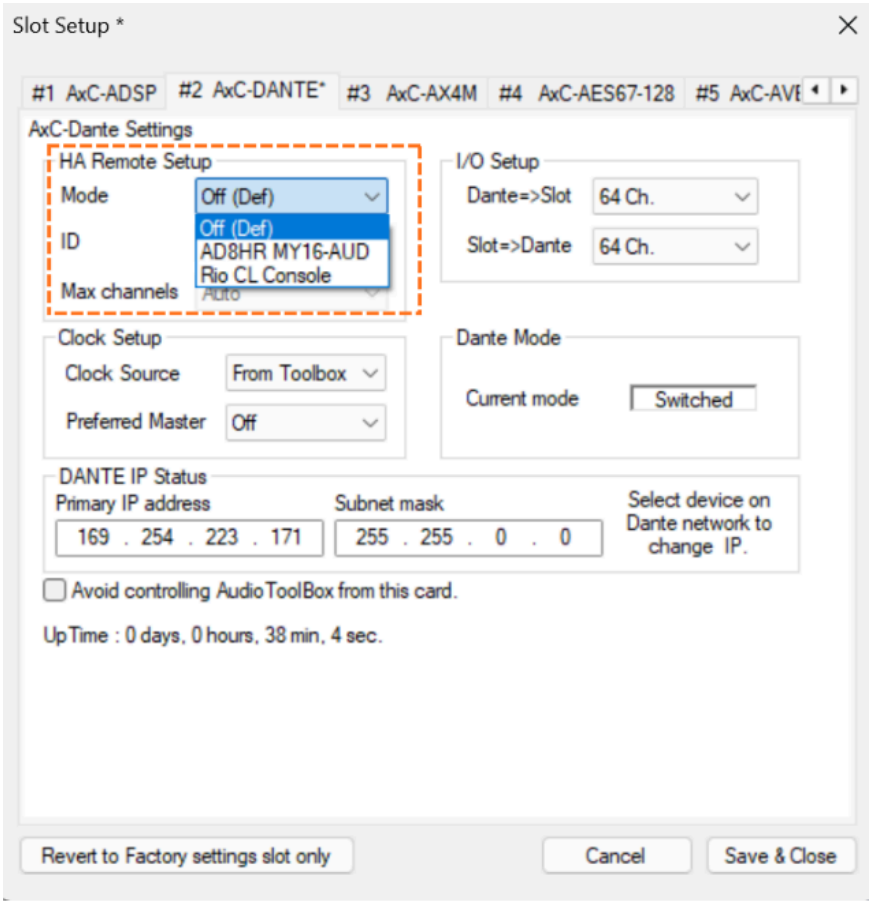
- ➔ The first character of the Dante ID should be a letter from “A” to “Z” (or “a” to “z”). No other character will be allowed. If the entered name is too long, it will be truncated to leave room for MAC address.
- ➔ Rename a device breaks existing audio routes from this device to other devices

5.9. AxC analogique HA-Remote control

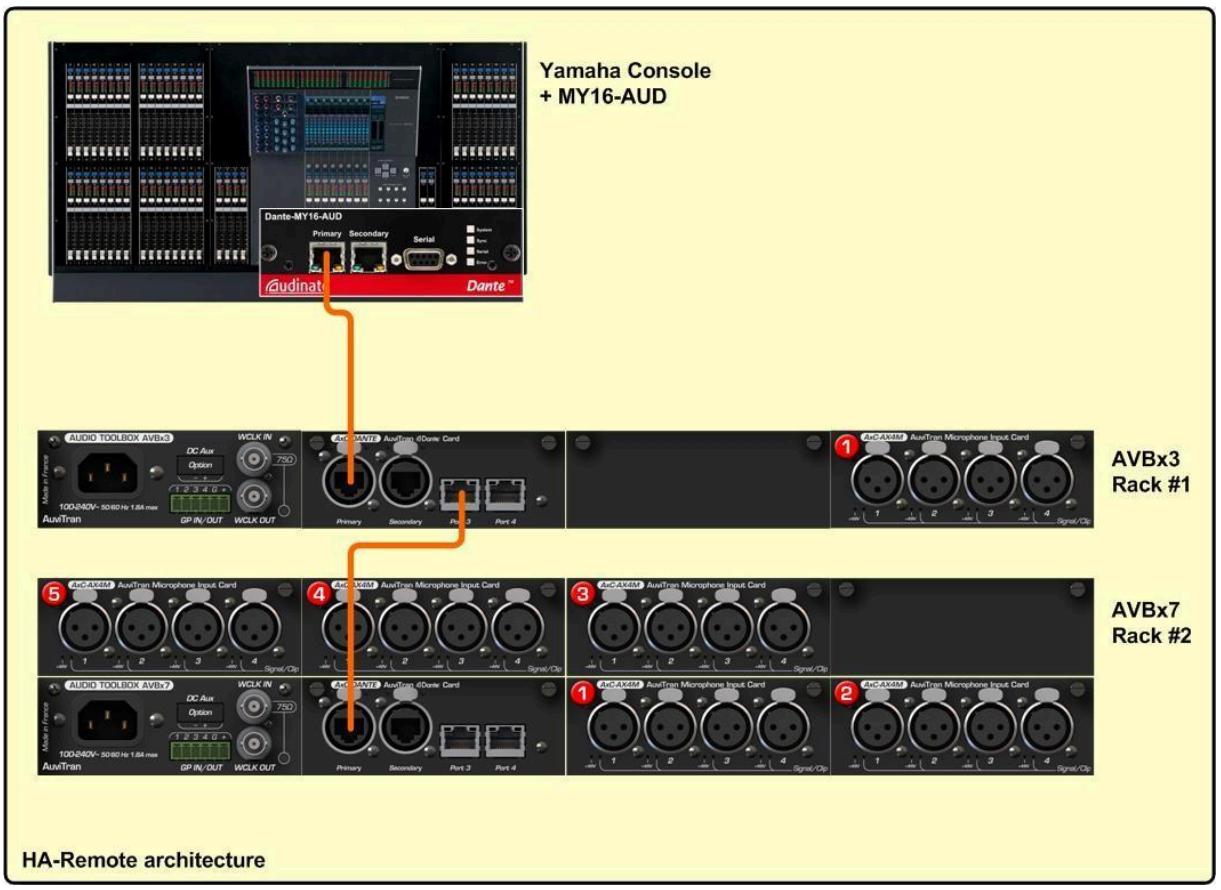
To enable HA-Remote on the Yamaha desk and MY16-AUD card, please refer to the manufacturer user’s manual.

The AxC-DANTE card can emulate AD8HR/SB168 devices, when plugged in an AuviTran Audio Toolbox equipped with AxC-AX4M Microphone input cards. When this emulation is enabled, the Yamaha desk will “see” the Audio Toolbox as being an AD8HR device.

As multiple Audio Toolbox (virtual AD8HR) can be controlled simultaneously, each device need to have a unique HA-Remote ID. This ID can be set in AxC-DANTE control page, using AVS-Monitor software.



Default HA-Remote mode is “OFF”. To start emulating an AD8HR, select “AD8HR MY16-AUD” in HA Remote Setup ⇒ Mode, choose ID and Max channels.



In this example, we have a Yamaha console equipped with MY16-AUD card, an Audio Toolbox AVBx3 equipped with one AxC- AX4M card, and an Audio Toolbox AVBx7 equipped with five AxC-AX4M cards. The configuration will be the following:

- Rack #1 will be assigned with ID #1. As an ID can handle up to 2 AxC-AX4M cards, it will be “fully” used even if only one card is plugged.
- Regarding previous point, rack #2 will receive ID #2. As 5 cards are plugged, it will also automatically use ID #3 and ID #4 (3 IDs = 2 x 2 cards + 1 card).
- If another rack should be plugged later, next ID available would be ID #5.

Regarding Yamaha desk “external HA racks”, we will have following situation:

- External rack #1: will display 8 channels, but only the first 4 channels are really used (AVBx3, card #1).

Channels 5 to 8 will be useless.

- External rack #2: will display 8 channels. Channels 1 to 4 handle AVBx7 card #1, channels 5 to 8 handle

AVBx7 card #2.

- External rack #3: will display 8 channels. Channels 1 to 4 handle AVBx7 card #3, channels 5 to 8 handle

AVBx7 card #4.

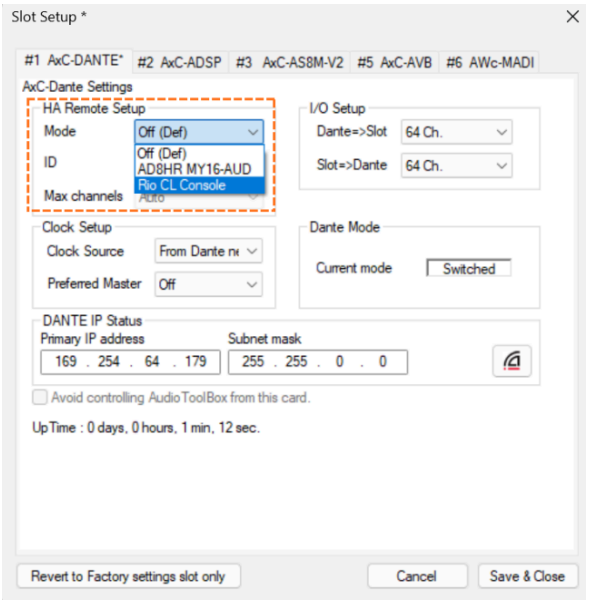
- External rack #4: will display 8 channels, but only the first 4 channels are really used (AVBx7, card #5).

Channels 5 to 8 will be useless.

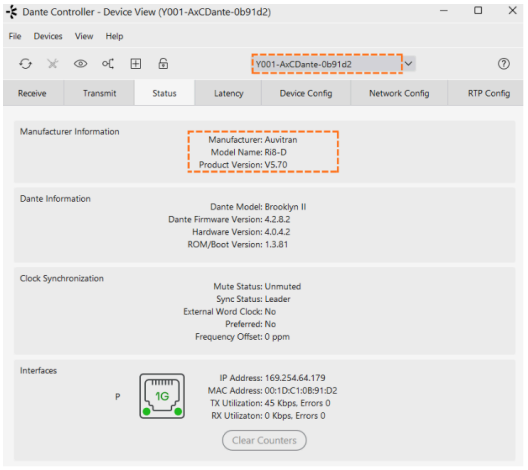
5.10. Mode RIO and Tio

By switching the Dante card to Rio mode, emulation of the Dante and analog cards is enabled within the ToolBox as a Yamaha Rio stage box. The presence of at least one AxC-Dante and one analog card (excluding the 8io series) must be ensured.

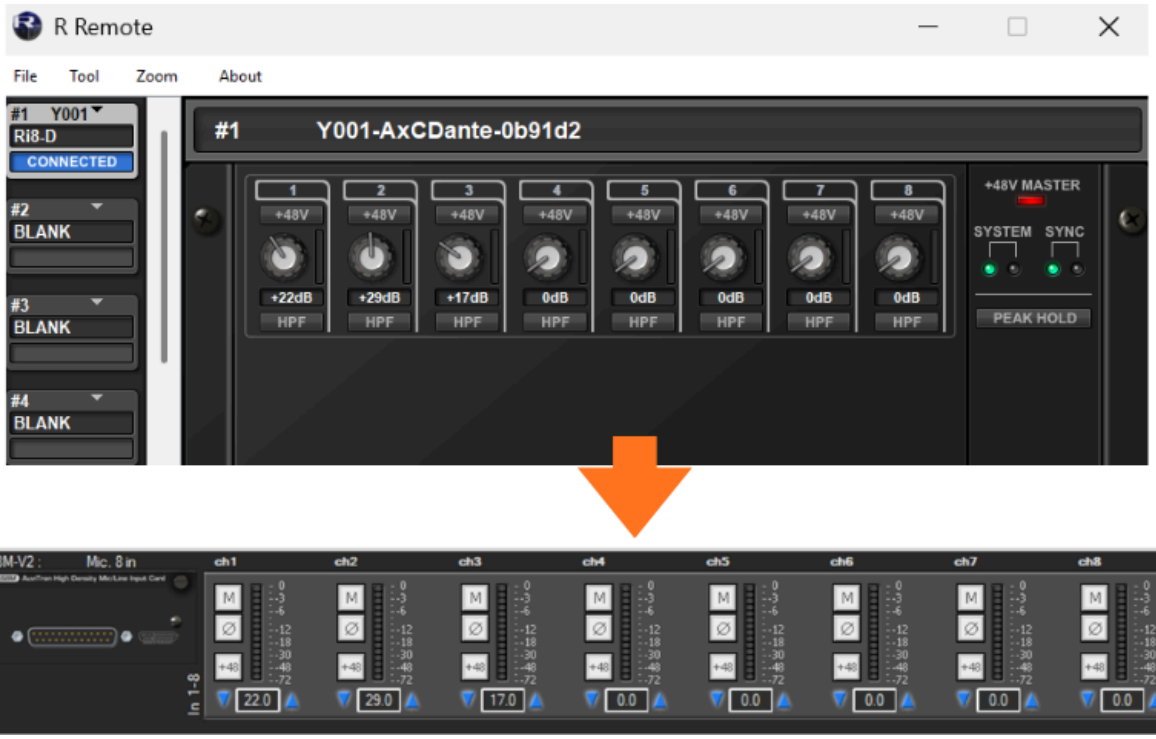
Upon switching the device to RIO mode, a firmware re-flash of the Dante card is automatically initiated so that its operational characteristics can be modified:



A temporary network disconnection will occur during this process. Upon completion of the firmware flash, the card is rebooted for the new configuration to take effect. The device then reappears on the network under a new name complying with the Yamaha naming convention. Successful transition to Rio mode may be confirmed by looking in AVS-Monitor or Dante Controller:

AVS-MONITOR	DANTE CONTROLLER
	

AVBx modules are rendered directly controllable from Yamaha consoles or dedicated management software. Control data (such as gain commands) is exchanged between the Yamaha software and our proprietary AVBx control software. Beneficially, support for older Yamaha protocols is continued, despite being dropped by their own newer hardware. This allows modern AVBx solutions to be managed via legacy Yamaha consoles:



FREQUENTLY ASKED QUESTION

- **How do I know if my AxC-DANTE card is in Switched or Redundant mode?**

    - A red led is visible when the redundant mode is activated
    - The card background is blue on AVS-Monitor when the redundant mode is activated

- **I cannot patch from/to my AxC-DANTE card**

Patch can be impossible:

- If the network bandwidth is full. If so, please consider removing some patch, or try to use multicast patch when possible.
- The device may be set to another sample rate than the source/destination device. Please check its sample rate as described in chapter “Sample Rate”.

- **My audio patch displays an orange warning icon instead of the green check.**

The device is patched to a module that does not exist anymore. Please check if the source/destination device is not removed from the network, or if its Dante ID has changed (see chapter “Renaming Dante-ID”).